

For each of the following equations 1-6, answer A-C.

A) Name by degree & number of terms B) Symmetry (even, odd, or neither) C) End Behavior

1. $y = -2x^2 - 3x + 4$

Quadratic Trinomial
Neither

$x \rightarrow \infty \quad f(x) \rightarrow -\infty$
 $x \rightarrow -\infty \quad f(x) \rightarrow -\infty$

2. $y = \cancel{10x^2 + 1} \rightarrow x^4 - 2x^2 + 1$

Quartic Trinomial
Even

$x \rightarrow \infty \quad f(x) \rightarrow \infty$
 $x \rightarrow -\infty \quad f(x) \rightarrow \infty$

3. $y = 2x^3 + 6x$

Cubic Binomial
Odd

$x \rightarrow \infty \quad f(x) \rightarrow \infty$
 $x \rightarrow -\infty \quad f(x) \rightarrow -\infty$

4. $y = -2x^3 + 3x$

Cubic Binomial
Odd

$x \rightarrow \infty \quad f(x) \rightarrow -\infty$
 $x \rightarrow -\infty \quad f(x) \rightarrow \infty$

5. $y = \cancel{10x^2} \rightarrow -x^3 + x^2$

Cubic Binomial
Neither

$x \rightarrow \infty \quad f(x) \rightarrow -\infty$
 $x \rightarrow -\infty \quad f(x) \rightarrow \infty$

6. $y = -x^3 + 3x^2 + 2x - 2$

Cubic Polynomial
Neither

$x \rightarrow \infty \quad f(x) \rightarrow -\infty$
 $x \rightarrow -\infty \quad f(x) \rightarrow \infty$

Factor:

7. $-7x^2 + 2x^3 + 4x - 14$

$(2x^3 + 4x) - 7x^2 - 14$

$2x(x^2 + 2) - 7(x^2 - 2)$

$(x^2 + 2)(2x + 7)$

8. $2xy^2 - 50x$

$2x(y^2 - 25)$

$2x(y + 5)(y - 5)$

9. $3y^2 - 15y - 252$

$3(y^2 - 5y - 84)$

$3(y - 12)(y + 7)$

10. $a^3b - 16ab^3$

$ab(a^2 - 16b^2)$

$ab(a - 4b)(a + 4b)$

11. $x^4 - 3x^2 - 4$

$(x^2 - 4)(x^2 - 1)$

$(x - 2)(x + 2)(x - 1)(x + 1)$

12. $64 + 8x^3$

$8(8 + x^3)$

$8(2 + x)(4 - 2x + x^2)$

Expand using Pascal's Triangle:

13. $(x - 3)^3$

$1x^3 \quad 3x^2(-3) \quad 3x(-3)^2 \quad 1(-3)^3$

$x^3 - 9x^2 + 27x - 27$

14. $(2x + y)^4$

$1(2x)^4 \quad 4(2x)^3y \quad 6(2x)^2y^2 \quad 4(2x)y^3 \quad 1y^4$

$16x^4 + 32x^3y + 24x^2y^2 + 8xy^3 + y^4$

